

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT process)

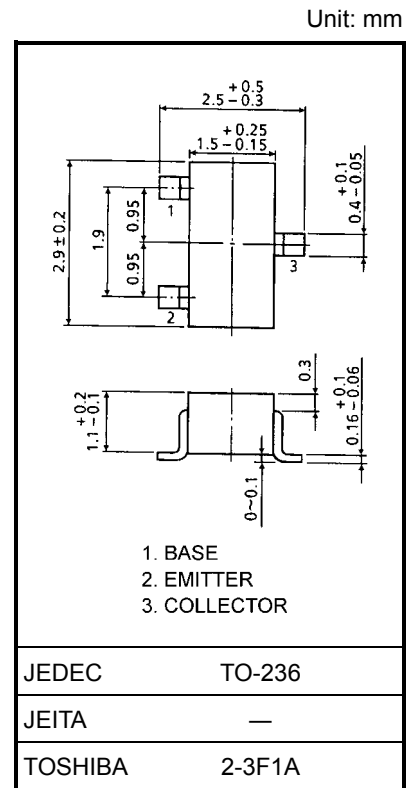
# 2SC2996

FM/AM RF, MIX, Local, IF  
High Frequency Amplifier Applications

- High stability oscillation voltage on FM local oscillator
- Recommend FM/AM RF, MIX, local and IF

### Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Collector-base voltage	V <sub>CB0</sub>	40	V
Collector-emitter voltage	V <sub>CEO</sub>	30	V
Emitter-base voltage	V <sub>EB0</sub>	4	V
Collector current	I <sub>C</sub>	50	mA
Emitter current	I <sub>E</sub>	-50	mA
Collector power dissipation	P <sub>C</sub>	150	mW
Junction temperature	T <sub>j</sub>	125	°C
Storage temperature range	T <sub>stg</sub>	-55~125	°C

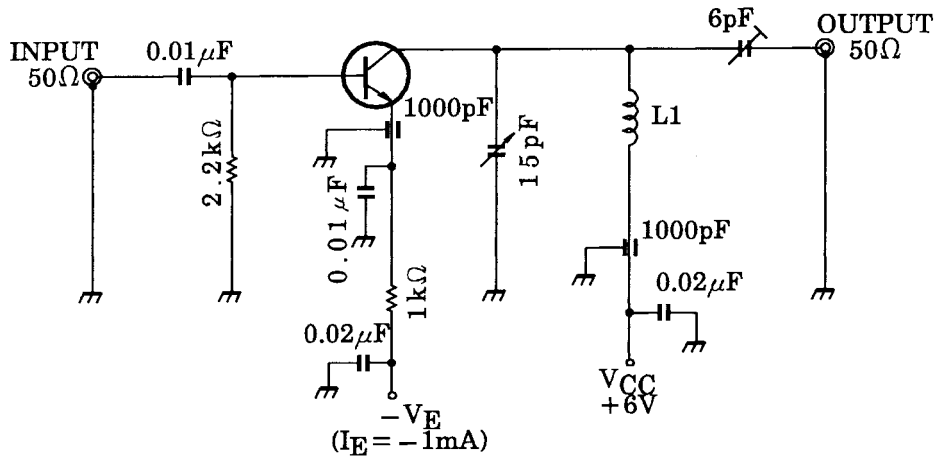


Weight: 0.012 g (typ.)

### Electrical Characteristics (Ta = 25°C)

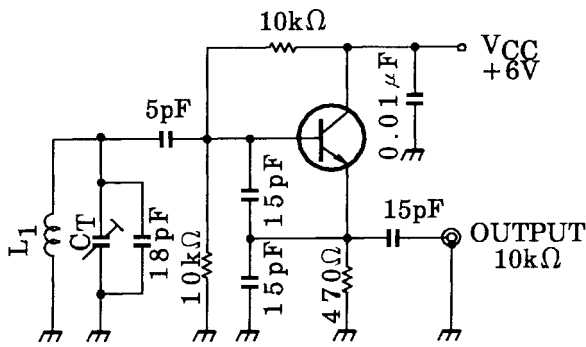
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I <sub>CB0</sub>	V <sub>CB</sub> = 40 V, I <sub>E</sub> = 0	—	—	0.1	μA
Emitter cut-off current	I <sub>EB0</sub>	V <sub>EB</sub> = 4 V, I <sub>C</sub> = 0	—	—	0.5	μA
DC current gain	h <sub>FE</sub> (Note)	V <sub>CE</sub> = 6 V, I <sub>C</sub> = 1 mA	40	—	240	
Reverse transfer capacitance	C <sub>re</sub>	V <sub>CB</sub> = 6 V, f = 1 MHz	—	0.9	1.3	pF
Transition frequency	f <sub>T</sub>	V <sub>CE</sub> = 6 V, I <sub>C</sub> = -1 mA	150	350	—	MHz
Collector-base time constant	C <sub>c.rbb'</sub>	V <sub>CE</sub> = 6 V, I <sub>E</sub> = -1 mA, f = 30 MHz	—	15	30	ps
Noise figure	NF	V <sub>CE</sub> = 6 V, I <sub>E</sub> = -1 mA, f = 100 MHz	—	4.0	—	dB
Power gain	G <sub>pe</sub>	(Figure 1)	—	15	—	dB
Oscillation output voltage	V <sub>OSC</sub>	V <sub>CE</sub> = 6 V, f = 100 MHz (Figure 2)	—	150	—	mV

Note: h<sub>FE</sub> classification R: 40~80, O: 70~140, Y: 120~240



L<sub>1</sub>: 0.8 mmφ silver plated copper wire, 4 T, 10ID, 8 length

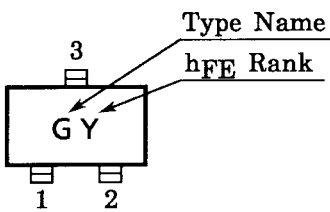
**Figure 1 NF, G<sub>pe</sub> Test Circuit**



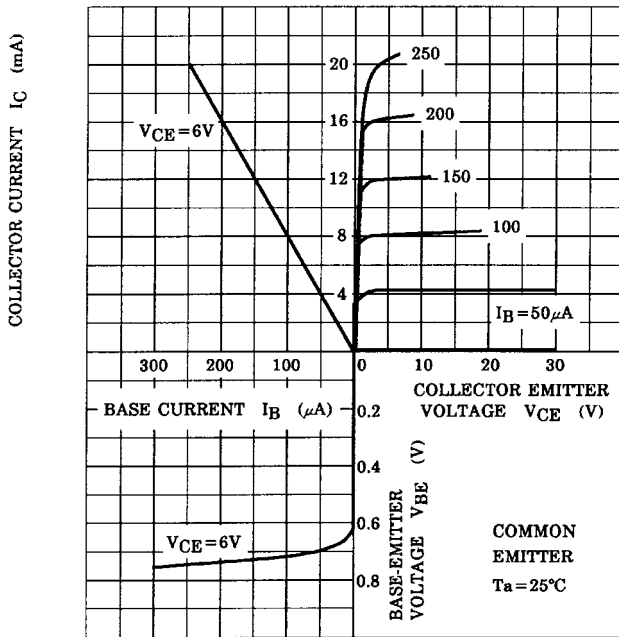
L<sub>1</sub>: 0.8 mmφ silver plated copper wire, 4 T, 10ID, 8 length

**Figure 2 V<sub>osc</sub> Test Circuit**

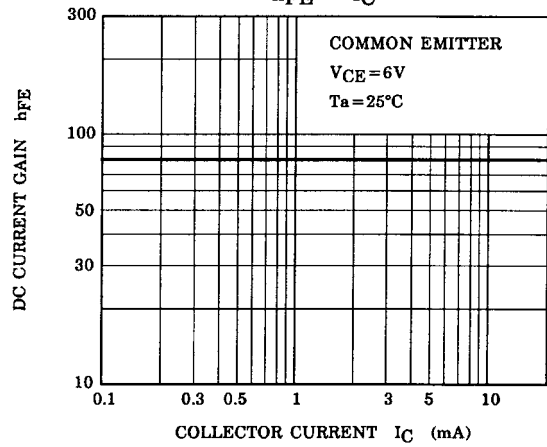
**Marking**



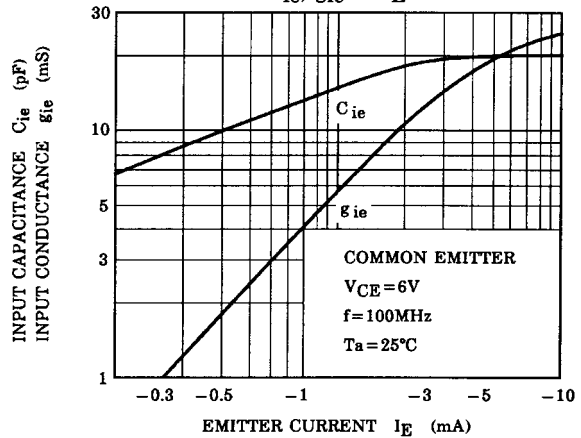
STATIC CHARACTERISTICS



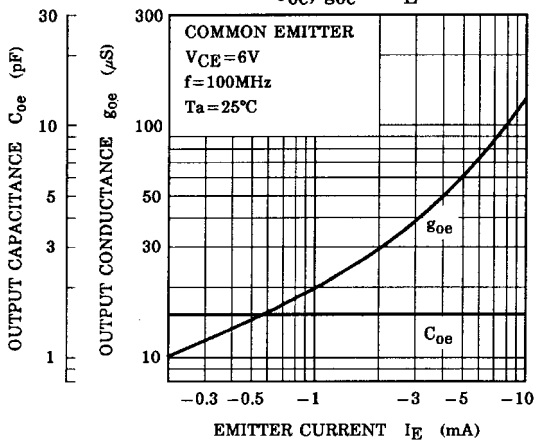
$h_{FE} - I_C$



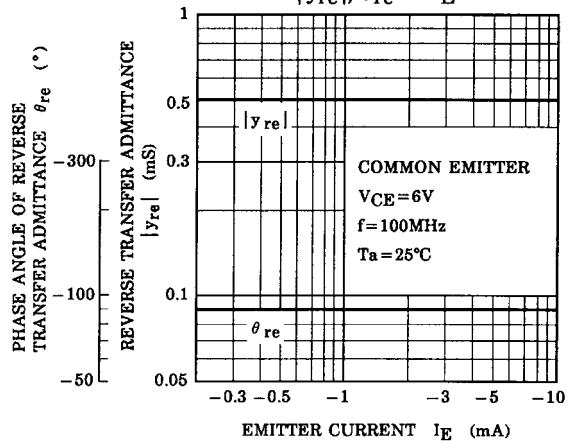
$C_{ie}, g_{ie} - I_E$

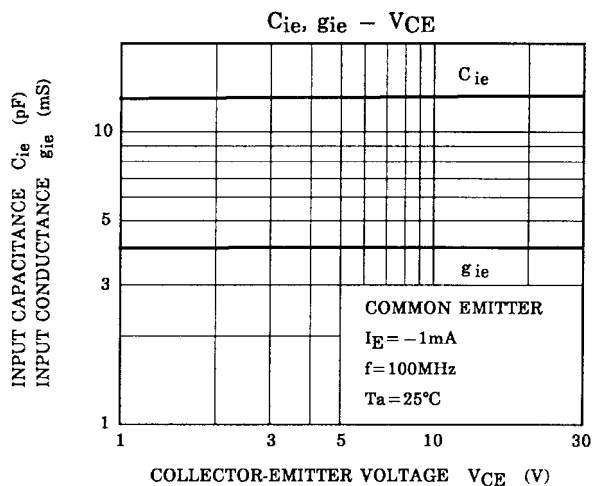
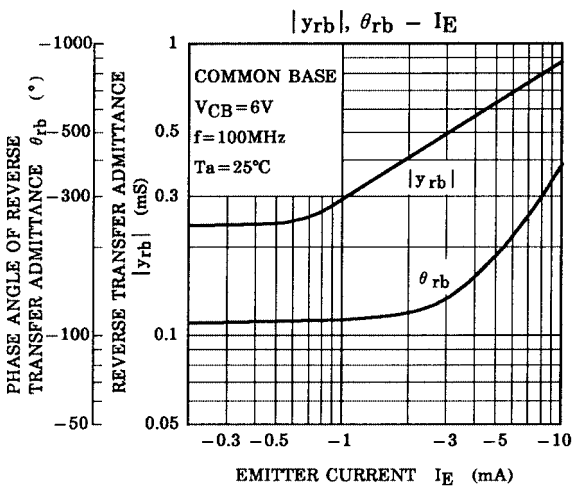
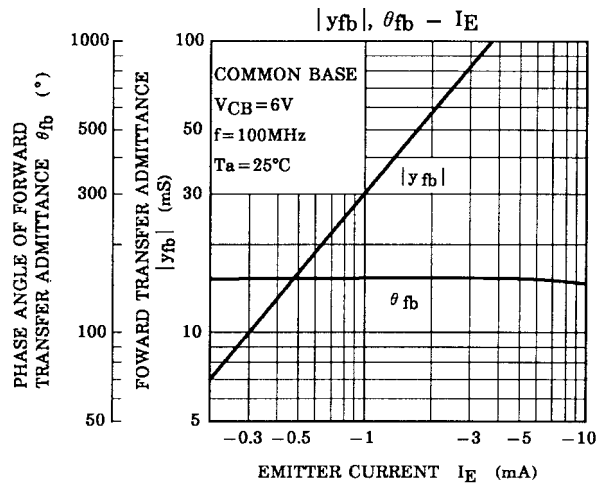
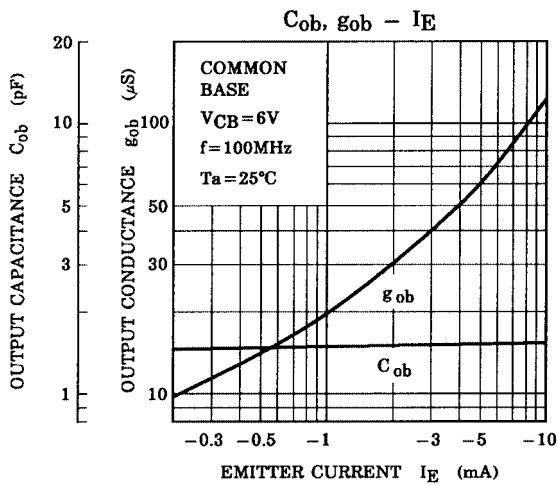
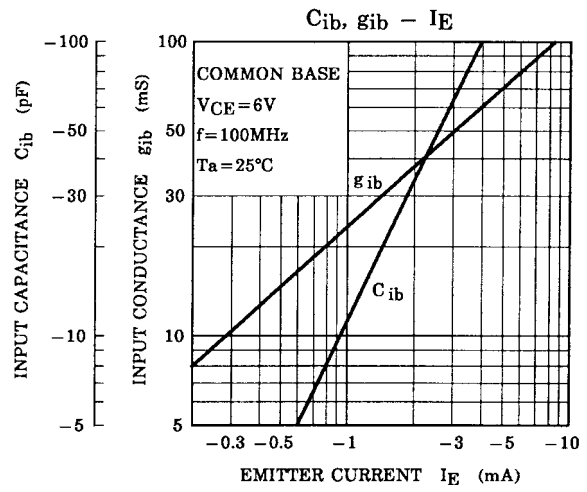
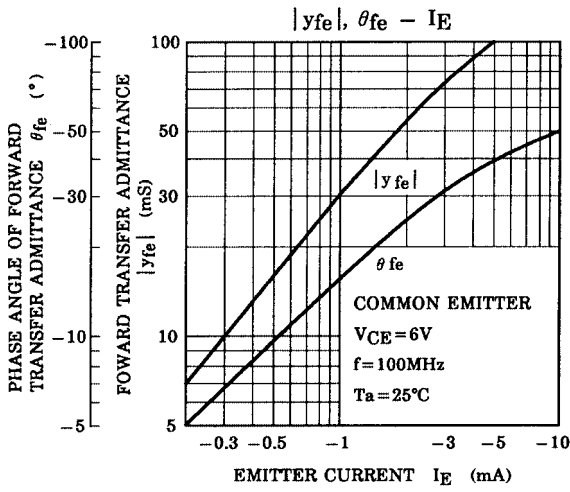


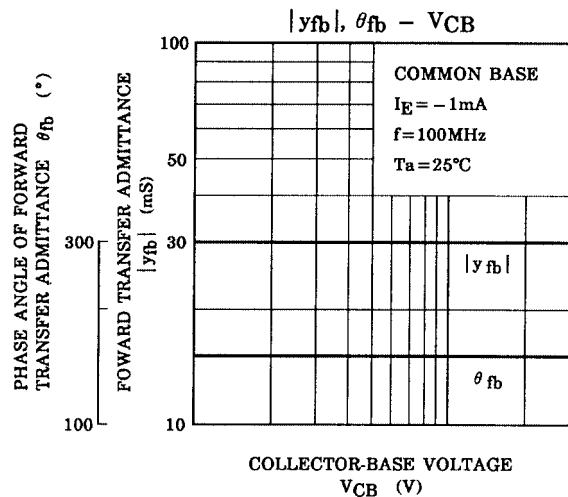
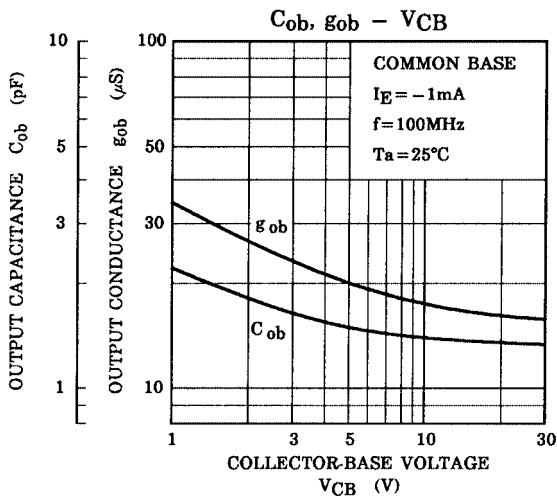
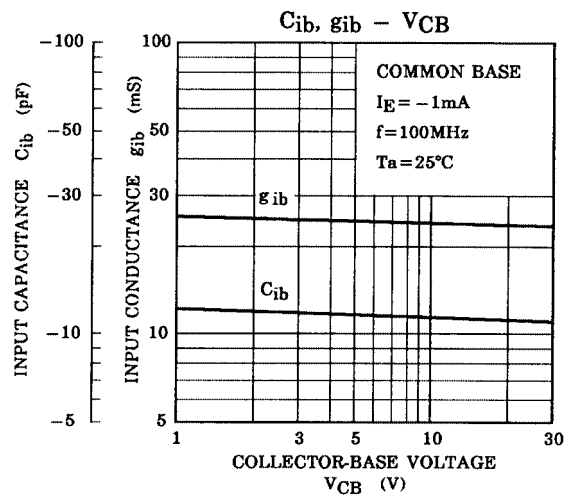
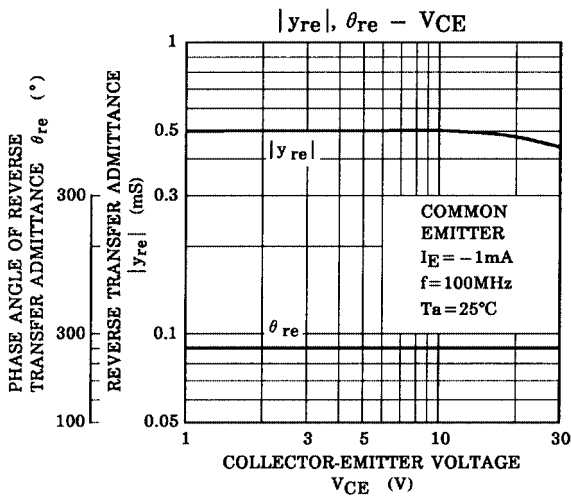
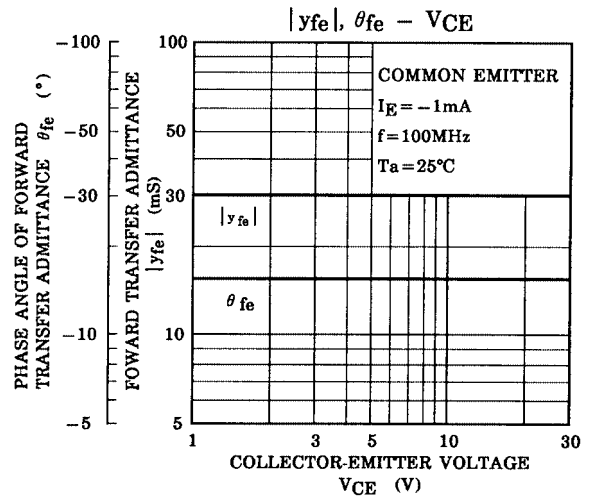
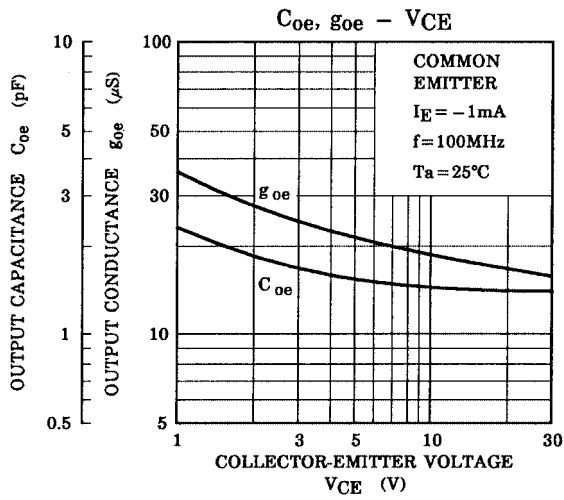
$C_{oe}, g_{oe} - I_E$

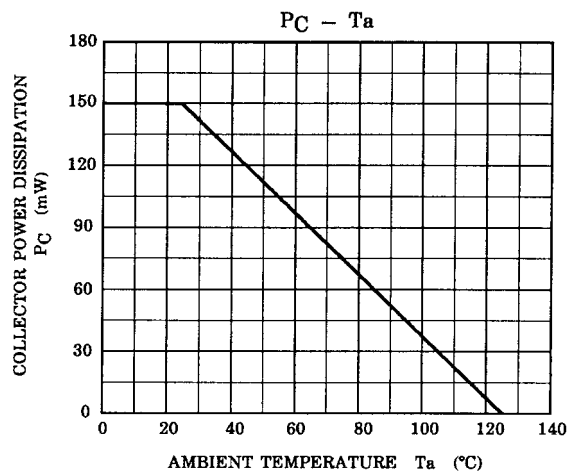
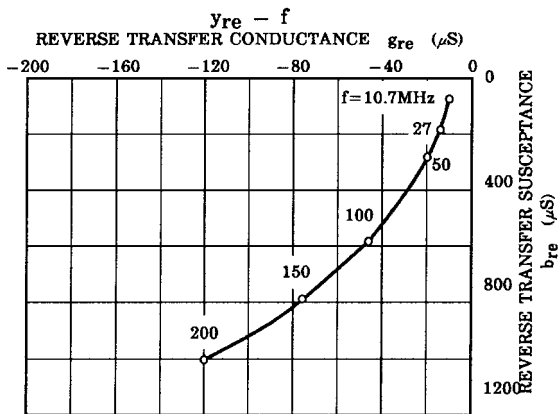
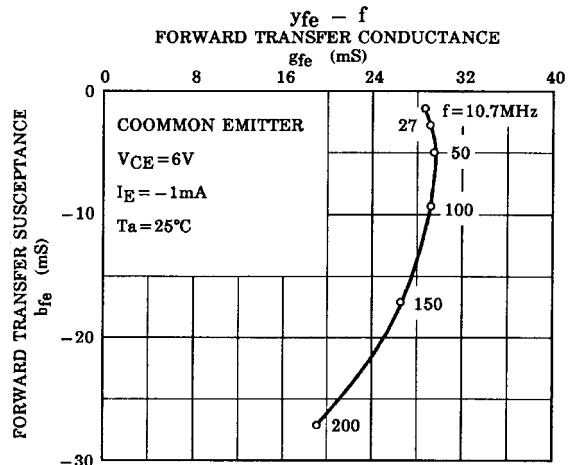
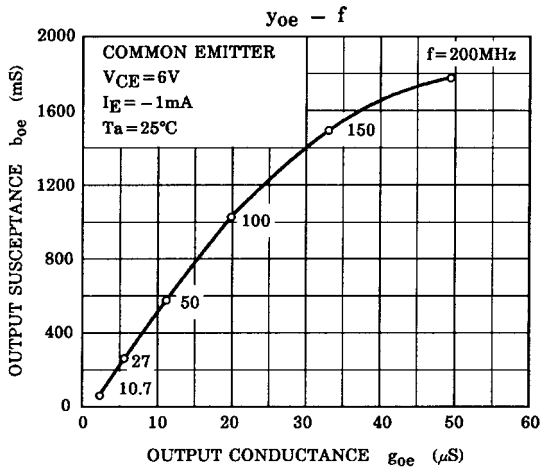
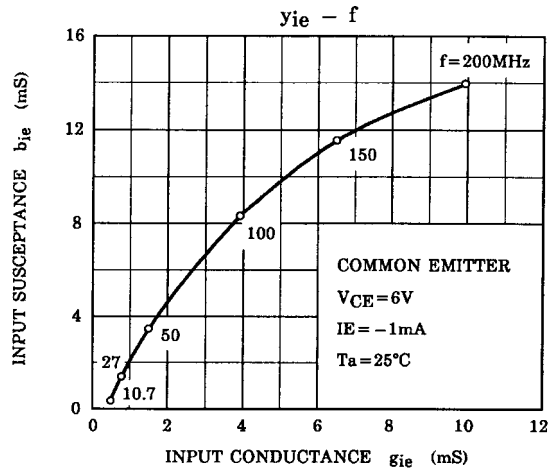
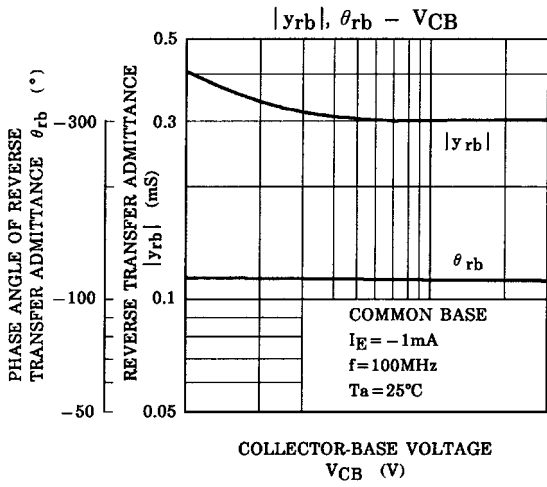


$|y_{re}|, \theta_{re} - I_E$









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